JOB SHEET

Surface Roughening

Oklahoma Conservation Practice Job Sheet **609**

USDA Natural Resources Conservation Service (NRCS) **November, 2003**

Landowner_____

WHAT IS SURFACE ROUGHENING?
Surface roughening is performing tillage operations that create random roughness of the soil surface.

PURPOSE
Surface roughening is used to:

- Reduce wind erosion
- Reduce dust emissions into the air
- Reduce deposition of soil into surface water
- Protect plants from abrasion by wind blown particles

HOW IT HELPS THE LAND
Surface roughening is an emergency tillage practice used to provide temporary control of wind erosion.

WHERE THE PRACTICE APPLIES
Surface roughening is applied to soils that have a surface layer suitable for clod formation and have a high potential for wind erosion due to the lack of surface cover or crop residues. This practice should not be used as a primary erosion control practice. It should only be used when a well planned and properly applied wind erosion control system fails for natural or weather related reasons.

WHERE TO GET HELP
For assistance with surface roughening, contact your local Natural Resources Conservation Service or your local Conservation District office.

APPLYING THE PRACTICE
Roughening the soil surface using tillage equipment that produces ridges is essential in controlling wind erosion. Ridges need to be of sufficient height and roughness to create voids in which moving soil particles can be trapped. To be most effective, the ridges produced by tillage need to be perpendicular to the direction of the damaging wind.

The initial tillage operation should be performed as soon as erosion begins in the field or as soon as it is evident that the existing cover or surface roughness is inadequate to control the erosion.

Tillage needs to start on the windward (up wind) edge of the field or area of concern.

Wide spacing of chisel points or skip chiseling (alternate chiseled/non-chiseled strips) for the first operation may permit salvaging part of a growing crop of small grain and leave undisturbed soil for later operations, if needed.

Spacing and depth of tillage operations are important to obtain uniform distribution of clods on the surface.

Close spacing at shallow depths generally pulverizes the soil, and does not produce enough random roughness to decrease the soil-blowing potential.

Proper tillage equipment matched to the crop being grown and soil is important. In general, chisels or narrow sweeps may reduce potential soil blowing on loamy or fine textured soils. Roughening the soil surface with a lister/bedder or wide shovels on chisel shanks is more effective on more coarse textured soils (sandy loams).

Surface roughening can be done on sandy soils using deep tillage, when soil moisture is adequate to create a stable aggregate (clod) and when finer soil material can be brought to the surface.

SURFACE ROUGHENING – DESIGN SHEET

Field No.	Soil "I" Value	Type of Tillage Implement	Random Roughness of Tillage Implement	Random Roughness Subfactor (K_{rr})